

Guidelines for Excavations

in the vicinity
of gas lines



Technical Standards &
Safety Authority

Putting Public Safety First

Definitions

Boundary Limits means the volume of soil contained by vertical planes placed 1 metre each side of the centre line of the pipeline.

Contractor or Excavator means the individual, partnership, corporation, public agency or other entity that dig, bore, trench, grade, excavate or break ground with mechanical equipment or explosives in the vicinity of a pipeline.

Gas Company means the individual, partnership, corporation, public agency, or other entity that operates the pipeline system.

Gas line or Pipeline means those facilities operated by a Gas Company through which gas is conveyed and includes pipe, components, and appurtenances attached to the pipe such as valves and fittings.

Locate means identification on the ground of the position of the pipeline based on records or electronic locating equipment.

Mechanical Equipment means any powered excavator, earth mover, earth piercing equipment or any other device that may damage the pipeline.

1.0 General Conditions

1.1 All work shall be carried out in accordance with:

- (a) the *Occupational Health and Safety Act* (OHSA) and Regulations which apply under this Act, including regulations for construction projects; and
- (b) the *Technical Standards and Safety Act* and Regulations which apply under this Act.

1.2 The procedures described herein are prepared in the interest of safety to the general public, the workers carrying out the excavation, and the prevention of damage to gas lines and property.

2.0 Notification

- 2.1
 - a) Prior to excavation the contractor responsible for the work shall contact the “Ontario One Call” at the telephone or facsimile numbers listed in Table 1 below, or local Gas Company or the equivalent in the service area, as the case may be, and request locates of the gas lines in the areas where excavation will be taking place. The contractor must receive the locates as described in Section 3.0 prior to commencing any excavation.
 - b) If removing asphalt but not road base, or removing sidewalk but not curb, a locate is not required.

Table 1: Ontario One Call

Toronto Area

Tel: (905) 709 - 1717

Fax: (905) 709 - 1711

Toll Free - Outside Toronto Area

Tel: 1-800-400-2255

Fax: 1-800-400-8876

Call Two Working Days Before You Dig

Enbridge Consumers GasOntario One Call

Union GasOntario One Call

Kitchener UtilitiesOntario One Call

Utilities Kingston.....(613) 546-1181, Ext. 2000 or 2010

Natural Resource Gas (NRG)(519) 773-5321
(Aylmer area, south of London)

Six nations Natural Gas(519) 445-4213
(South of Brantford area)

Note: If you are planning to excavate in an area not serviced by any of the above gas utilities please contact the local municipality before excavating.

- 2.2 The notification shall provide the location where the work will take place, the expected time when the work will begin, the scope of the work, the expected duration, the name, address and telephone number of the contractor, and the name of the contractor’s site representative.
- 2.3 Except in emergency situations, requests for stakeouts or locate information should be made at least 48 hours in advance (two working days).
- 2.4 Except in cases of emergency, or where the response for the location request has been agreed with the excavator or in extremely remote rural areas, Gas Companies will make every reasonable effort to respond to notification requests and provide locates where applicable within 48 hours (two working days) of the notification.

3.0 Locates

- 3.1 The locate, using labelled stakes, flags, and/or high visible paint marks, should indicate the centre line of the gas line in the defined area of the proposed excavation.
- 3.2 When requested, a diagram describing the locate information in 3.1 should be provided to the contractor’s site representative if present at the time of locate; otherwise, sent to the person who requested the

locate. The diagram should indicate in clear legible terms the locate information and may be qualified by words regarding scale or orientation.

- 3.3 Where no gas lines are in the defined area of the proposed excavation a verbal confirmation may be provided to the contractor by the Gas Company. Written confirmation will be provided on request.

4.0 Locate Boundaries/Accuracy

- 4.1 The excavator must not work outside of the area covered by the “Stakeout Information” without obtaining a further stakeout.
- 4.2 Locate accuracy should be considered to be 1 metre on either side of the surface centre line locate unless the locate instructions specifically indicate other boundary limits.
- 4.3 Gas lines are usually found within 1.5 metres of the surface. Where the Gas Company knows that the gas line is deeper than 1.5 metres, the Gas Company must so indicate to the excavator. However, this information does not permit the excavator to use mechanical equipment to dig within the boundary limits to locate the gas line.
- 4.4 Where the gas line cannot be located using the procedures described in Section 6.0, the contractor must contact the Gas Company and the Gas Company must assist with the locate.

5.0 Duration

- 5.1 Stakes or markings may disappear or be displaced. Old stakeouts should not be used. Where delays occur beyond the specified period stated in 5.2 or where the stakeout markings become unclear, a new locate must be requested by the contractor.
- 5.2 Where a locate is valid for a specified period of time the deadline must be indicated on the locate form or diagram.

6.0 Initial Exposure

- 6.1 At no time, with the exception of 2.1 (b), should a contractor or their sub-contractors use mechanical equipment within the boundary limits of the locate without first digging hole(s) to determine the gas line’s exact centre line and depth of cover.
- 6.2 Test holes should in general be excavated by one of the following methods:
 - a) mechanical equipment could be used immediately outside of

the boundary limits and then hand dug laterally until the gas line is found; or

- b) i) hand excavation between the boundary limits of the locate in cuts of at least 0.3 metre (1foot) in depth,
 - ii) mechanical equipment could then be used to widen the hand dug trench to within 0.3 metre (1 foot) of the depth of the hand excavation,
 - iii) repeat step (i) and (ii) until the pipeline is located,
 - iv) with prior agreement of the Gas Company, machines using vacuum, water or air as the cutting method may be used to locate and expose pipelines as an alternative to hand digging.

6.3 a) concrete saws, jackhammers, hand tools or other similar equipment may be used to break concrete or asphalt on a road or sidewalk surface.

b) With the exception of 2.1 (b), 6.2 (a) and (b), mechanical equipment should only be used to remove broken asphalt or concrete.

c) Concrete below the road surface layers should not be removed without consultation with the Gas Company which may have gas lines encased therein.

6.4 Additional test holes should be dug where:

- a) alignment changes are identified by Gas Company representatives, or
- b) changes in elevation are identified by Gas Company representatives.

7.0 Excavating After Test Holes Are Completed

7.1 Where test holes in an area have been completed and the gas line located excavation using mechanical equipment may take place provided the following procedures are used:

- a) wherever possible, mechanical excavating equipment should be operated parallel to the direction of the gas line when the excavation is within 1 metre of the gas line; and
- b) mechanical equipment must not be used closer than 0.3 metre (1 foot) to the gas line;
- c) excavation within 0.3 metre (1 foot) of the gas line must be carried out by hand equipment and tools;

d) where the proposed excavation is closer than 0.3 metre (1 foot) to the gas line, the line shall be exposed:

i) by mechanical equipment up to 0.3 metre (1 foot) above the gas line,

ii) by hand equipment and tools within 0.3 metre (1 foot) of the top of the line.

e) as an alternative to hand equipment and tools, with prior agreement of the Gas Company, machines using vacuum, water or air systems as the cutting method may be used to locate and expose the pipeline.

7.2 Guidelines for blasting close to gas pipelines must be obtained from the local Gas Company.

7.3 Guidelines for pipelines needing support must be obtained from the local Gas Company.

8.0 Backfilling

8.1 Where trenches are to be backfilled, the following requirements should be followed:

a) backfilling should be performed in such a manner as to provide firm support under the pipe; and

b) trench must be backfilled with clean fill or granular material free of material injurious to the pipe coating and pipe; the Gas Company must be contacted for the selection of other backfill material; and

c) where flooding of trenches is done to consolidate the backfill, care must be exercised so that the pipe is not floated from its firm bearing on the ditch bottom.

9.0 Abandoned Gas Lines

9.1 Where a line is found during excavation that was not located by the Gas Company, but within the area covered by the locate, never assume the line is abandoned. The Gas Company should be notified immediately to determine if the line is abandoned.

9.2 Abandoned gas lines are defined as lines which have been disconnected and purged in accordance with the CSA Z662 Standard. Excavations in the vicinity of abandoned gas lines shall not be subject to the guidelines in Section 7.0.

10.0 Colour Coding

10.1 Markings on stakes, streets and sidewalks must be yellow.

11.0 Procedure Where Damage Occurs

11.1 If damage to the coating or pipe occurs and no gas is escaping, leave the pipe exposed and contact the Gas Company. In most cases, utilities will not charge excavators for coating repairs.

11.2 If gas is escaping, shut off vehicles or equipment, remove or extinguish all ignition sources, barricade the area off, keep public and workers away. No attempt should be made to control the escaping gas.

11.3 Notify the Fire Department, Police and Gas Company.

12.0 Acts and Regulations

A copy of the relevant sections of the *Technical Standards and Safety Act* and the Ontario Regulation on Oil and Gas Pipeline Systems are attached as Appendix 1.

Appendix 1

Sections of the *Technical Standards and Safety Act*:

Offences

37. (1) Every person who,
- (a) contravenes or fails to comply with any provision of this Act, the regulations or a Minister's order;
 - (b) knowingly makes a false statement or furnishes false information under this Act, the regulations or a Minister's order;
 - (c) contravenes or fails to comply with a term or condition of an authorization;
 - (d) contravenes or fails to comply with an order or requirement of an inspector or obstructs an inspector,
- is guilty of an offence and on conviction is liable to a fine of not more than \$50,000 or to imprisonment for a term of not more than one year, or to both, or, if the person is a body corporate, to a fine of not more than \$1,000,000. 2000, c. 16, s. 37 (1).

Duty of director or officer

(2) Every director or officer of a body corporate has a duty to take all reasonable care to prevent the body corporate from committing an offence under subsection (1). 2000, c. 16, s. 37 (2).

Offence

(3) Every director or officer of the body corporate who has a duty under subsection (2) and who fails to carry out that duty is guilty of an offence and on conviction is liable to a fine of not more than \$50,000 or to imprisonment for a term of not more than one year, or to both. 2000, c. 16, s. 37 (3).

Separate offence

(4) Where a person contravenes any of the provisions of this Act, the regulations, a Minister's order or any notice or order made under them on more than one day, the continuance of the contravention on each day shall be deemed to constitute a separate offence. 2000, c. 16, s. 37 (4).

Administrative penalty

(5) A person against whom an administrative penalty has been levied by a designated administrative authority or, in the absence of such authority, by the Minister does not preclude a person from being charged with, and convicted of, an offence under this Act for the same matter. 2000, c. 16, s. 37 (5).

Time limit

(6) No proceeding in respect of an alleged offence under this Act may be commenced after two years following the date on which the facts that gave rise to the alleged offence were discovered. 2000, c. 16, s. 37 (6).

41. Every contractor and employer shall take all reasonable precautions to ensure that they and their agents and employees comply with this Act, the regulations or a Minister's order.

Sections of the Oil and Gas Pipeline Systems Regulation:

Ascertaining pipeline locations

9. (1) No person shall dig, bore, trench, grade, excavate or break ground with mechanical equipment or explosives without first ascertaining from the licence holder the location of any pipeline that may be interfered with.

(2) The licence holder shall provide as accurate information as possible on the location of any pipeline within a reasonable time in all the circumstances.

No interference with pipeline

10. No person shall interfere with or damage any pipeline without authority to do so.

Appendix 2

Procedures for using hydro-excavation machines to locate and expose pipelines as an alternative to hand digging.

The following procedures shall be followed at all times when excavating with hydro-excavation technology within 1 m of gas plants.

1. Obtain locates prior to commencement of work. Only a competent, qualified worker shall operate hydro-excavation equipment.
2. The maximum water pressure to be used at any time during excavation shall be 17250 kPa (2500 psi). Below a depth of 45 cm (18") the water pressure shall be reduced to a maximum of 10350 kPa (1500 psi).
3. The wand shall never remain motionless during excavation. Aiming directly at the plant shall be avoided at all times.
4. A distance of 20 cm (8") shall be maintained between the end of the pressure wand nozzle and the plant and/or the subsoil. The nozzle shall never be inserted into the subsoil while excavating above the plant.
5. Only use hydro-excavation equipment and nozzles that have been specifically designed for use around buried gas lines or other reasonably expected underground gas plant.
6. A device capable of stopping the excavation on demand, such as a trigger or valve, shall be installed on the wand.
7. If heated water is used during excavation, the temperature of the water shall never exceed 115 F° (45 °C).
8. If damage to gas plant occurs while using hydro-excavation technology or any other method of excavation, the excavator shall contact the gas utility.